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| APPLICATION NO.              | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------------|-------------|----------------------|---------------------|------------------|
| 10/649,450                   | 08/26/2003  | Michael Doogue       | ALLEG-039PUS        | 5775             |
| 22494                        | 7590        | 06/07/2004           | EXAMINER            |                  |
| DALY, CROWLEY & MOFFORD, LLP |             |                      | OLIVA, CARMELO B    |                  |
| SUITE 101                    |             |                      | ART UNIT            |                  |
| 275 TURNPIKE STREET          |             |                      | PAPER NUMBER        |                  |
| CANTON, MA 02021-2310        |             |                      | 2831                |                  |

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/649,450

**Applicant(s)**

DOOGUE ET AL.

**Examiner**

Carmelo Oliva

**Art Unit**

2831

*aw*

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-19, 21, 22 and 24 is/are rejected.
- 7) ☒ Claim(s) 12, 20 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/26/03</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Specification***

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 is indefinite since it is unclear how the thickness of the clip is related to the current passing through the clip. The claim has been examined as best understood.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3,8,9,13,14,17-19,21,22 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohtsuka (US 6,683,448).

Regarding claim 1, Ohtsuka '448 discloses an integrated circuit in Fig. 1, comprising:

a lead frame having a plurality of leads (5-8);

a current conductor portion 2 comprising a coupling of at least two of the plurality of leads;

a substrate 9 having a first surface proximate to said current conductor portion and a second surface distal from said current conductor portion; and

one or more magnetic field transducers 1 disposed on the first surface of said substrate.

Regarding claim 2, said substrate is disposed having the first surface of said substrate above said current conductor portion and the second surface above the first surface (flip Fig. 1).

Regarding claim 3, said substrate is disposed having the first of said substrate below said current conductor portion and the second surface below the first surface.

Regarding claim 8, said substrate has at least one bonding pad (12-15) coupled to a corresponding one of the plurality of leads with a bond wire.

Regarding claim 9, said substrate is associated with a selected one of a solder ball, a gold bump, a eutectic and high lead solder bump, a no-lead solder bump, a gold

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stud bump, a polymeric conductive bump, an anisotropic conductive paste, and a conductive film coupled to a corresponding one of the plurality of leads.

Regarding claim 13, at least a portion of said current conductor portion has a rectangular cross section having a minimum dimension less than a thickness of said lead frame (see Fig. 2).

Regarding claim 14, at least one amplifier disposed on said substrate (col. 3, line 50).

Regarding claim 17, a flux concentrator disposed proximate said one or more magnetic field transducers (col. 7, lines 44-47).

Regarding claim 18, a flux concentrating layer disposed proximate the second surface of said substrate (col. 7, lines 44-47).

Regarding claim 19, Ohtsuka '448 discloses a method of manufacturing an integrated circuit, comprising:

providing a lead frame having a plurality of leads (3-8) of which at least two are coupled together (3,4) to form a current conductor portion; and

etching the current conductor portion to provide the current conductor portion with a cross section having a predetermined shape.

Regarding claim 21, the predetermined shape comprises a rectangular shape having a minimum dimension less than a thickness of said lead frame (see Fig. 2).

Regarding claim 22, mounting a substrate (9) proximate said lead frame, the substrate having a first surface proximate to the current conductor portion and a second

opposing surface disposed distal from the current conductor portion, wherein one or more magnetic field transducers are disposed on the first surface of the substrate.

Regarding claim 24, the predetermined shape comprises a rectangular shape having a minimum dimension less than a thickness of said lead frame (see Fig. 2).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtsuka (US 6,683,448) in view of McDonald et al. (US 4,893,073).

Regarding claim 4, the current conductor portion of Ohtsuka is not said to comprise a conductive clip coupled to the at least two of the plurality of leads. However,

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McDonald et al. discloses a current conductor in Fig. 2 wherein the current conductor comprises a clip (20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a conductive clip as taught by McDonald et al. in order to concentrate current induced flux through the magnetic sensor (abstract lines 3-7).

Regarding claim 5, said substrate of McDonald is disposed having the first surface of said substrate above said conductive clip and the second surface of said substrate above the first surface (flip Fig. 2).

Regarding claim 6, said substrate of McDonald is disposed having the first surface of said substrate below said conductive clip and the second surface below the first surface.

Regarding claim 7, a thickness of the conductive clip is selected in accordance with a current passing through the conductive clip.

9. Claims 10,11,15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtsuka (US 6,683,448).

Regarding claims 10,11,15 and 16, Ohtsuka '448 discloses an amplifier (col. 3, line 50) but does not disclose multiples of said one or more magnetic field transducers. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have multiple transducers, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 3 USPQ 8

***Allowable Subject Matter***

10. Claims 12, 20 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

Claims 12,20 and 23 are allowable because the prior art alone or in combination does not teach or fairly suggest an integrated circuit comprising a current conductor portion having a T shaped cross section, taken in combination with the other claimed features.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Goto et al. (US 6,727,683), Ohtsuka (US 6,462,531), Baba et al. (US 6,252,389), Goto (US 2004/0080308), and Stauth et al. (US 2004/0056647) all show current sensors having Hall effect transducers.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carmelo Oliva whose telephone number is (571)272-1982. The examiner can normally be reached flexible hours on Monday through Friday with every other Wednesday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard, can be reached at (571)272-2800 ext. 31. The fax phone




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number for the organization where this application or proceeding is assigned is (703)

872-9306.

  
DEAN A. REICHARD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800